



Alaska Hydrologic Remote Sensing: Current Capabilities and Needs

Alaska Pacific River Forecast Center

August 29, 2018



Outline



- NOAA's Hydrologic Endeavor in Alaska
- Current JPSS products used
- Gaps for future R&D



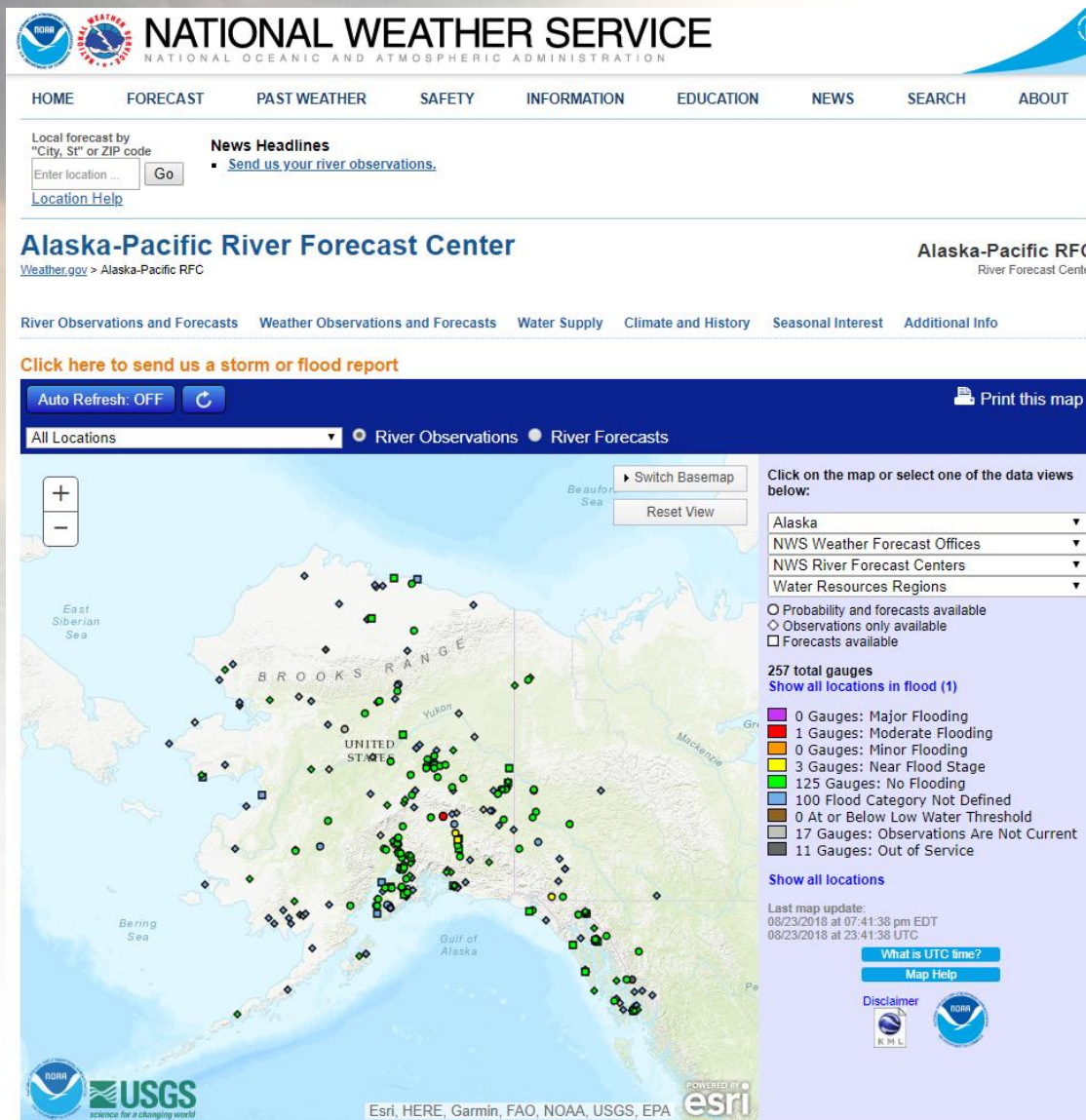
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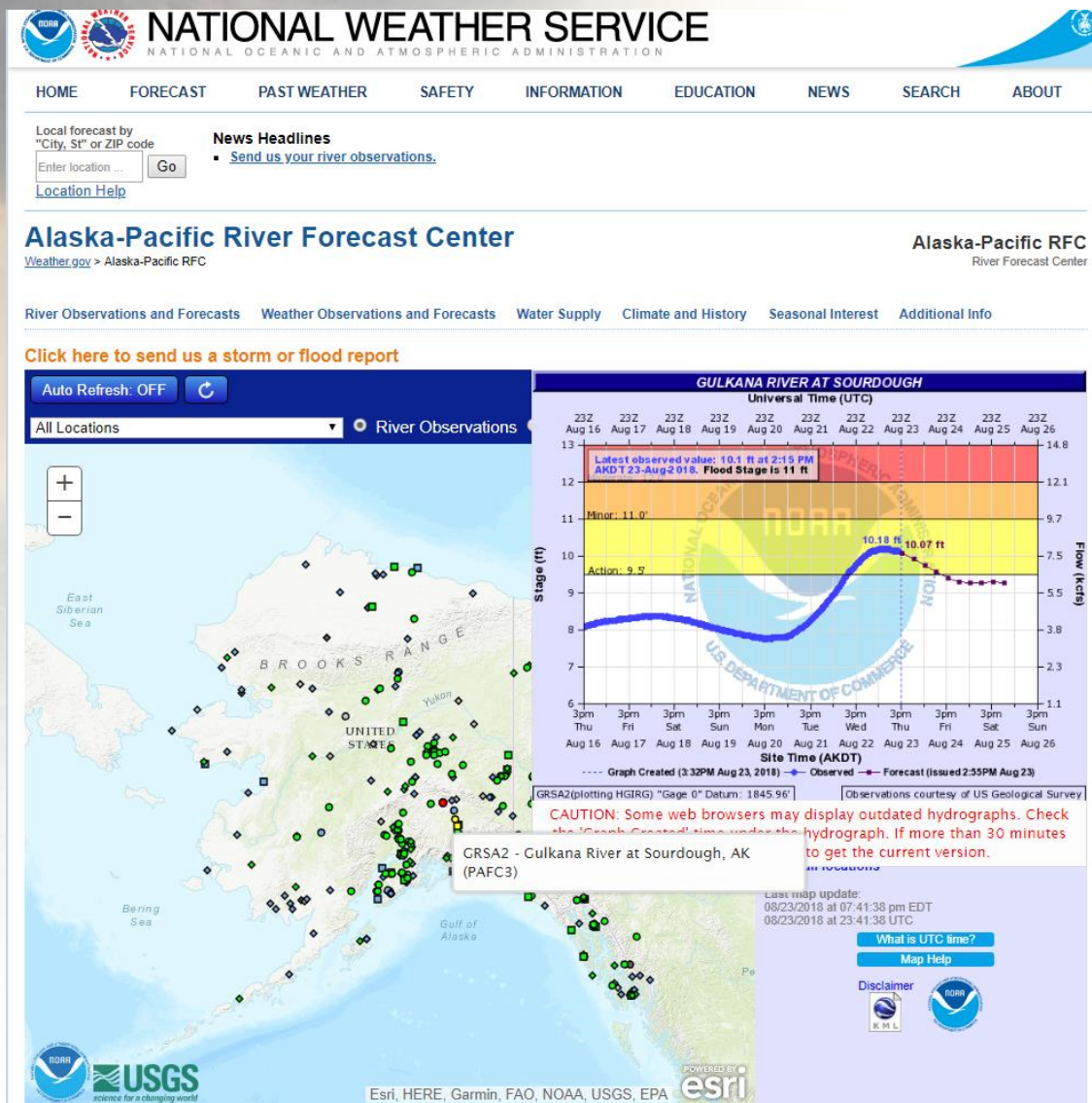


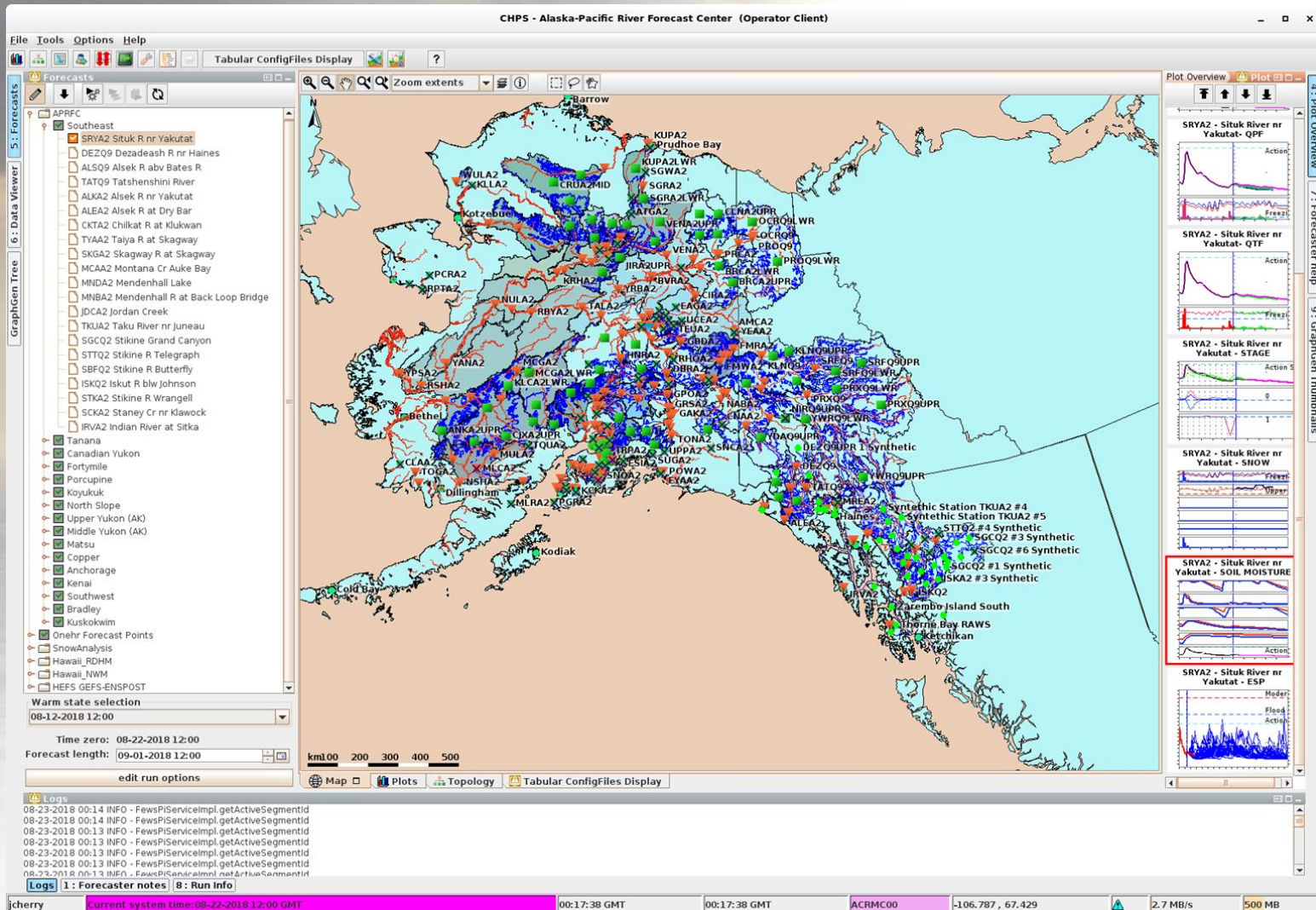
NWS Hydrology Mission in Alaska: Current Graphical Products





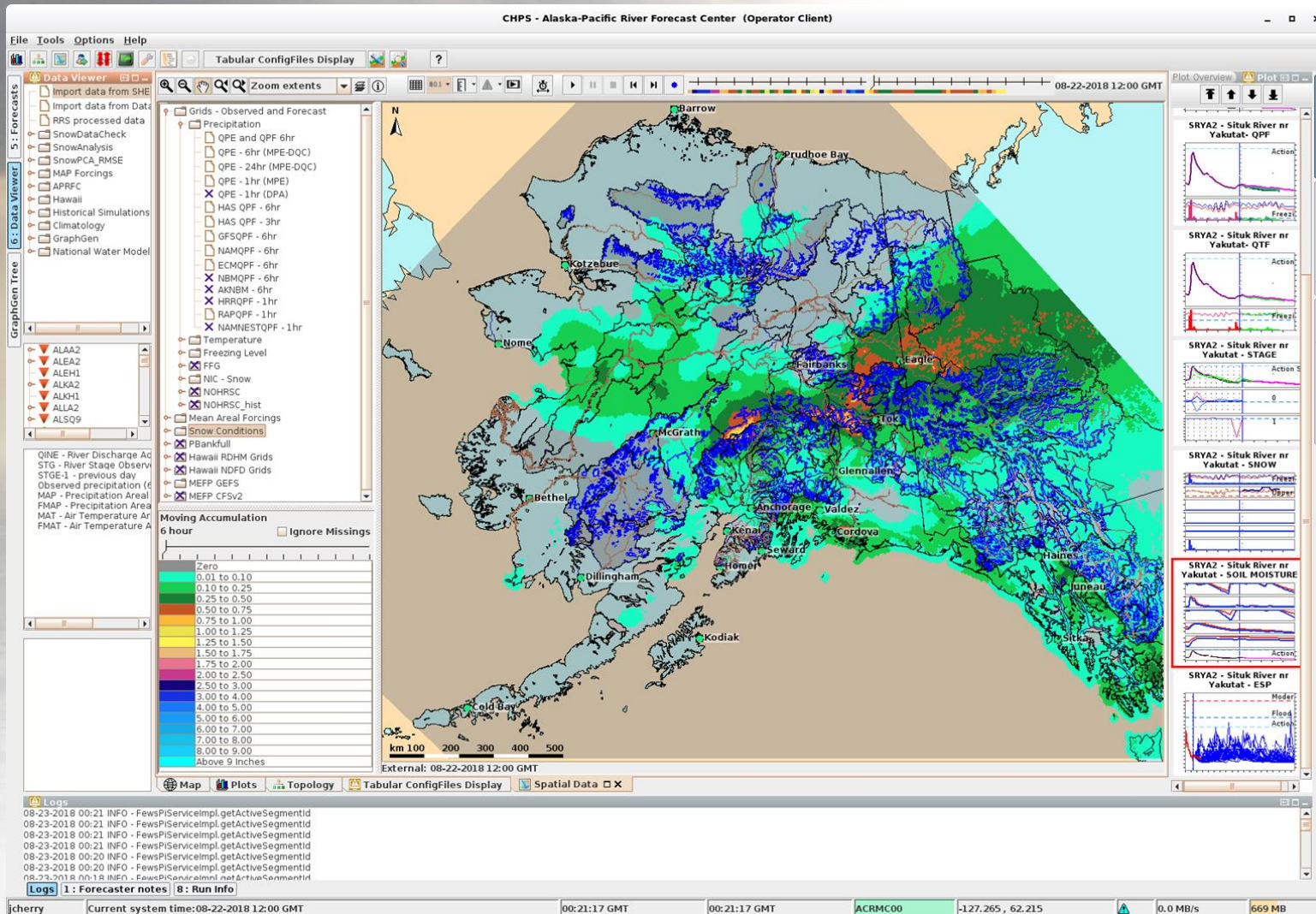
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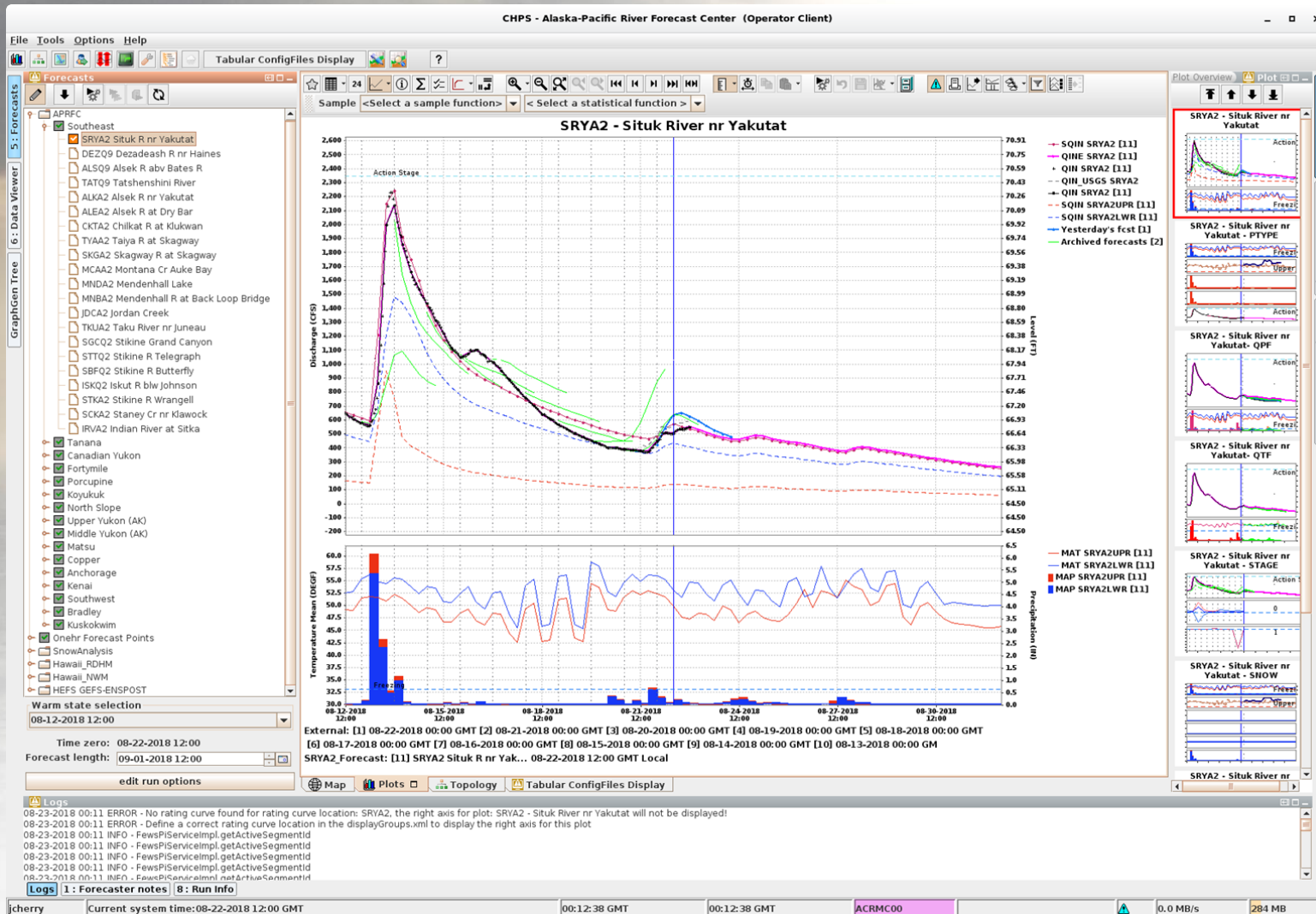






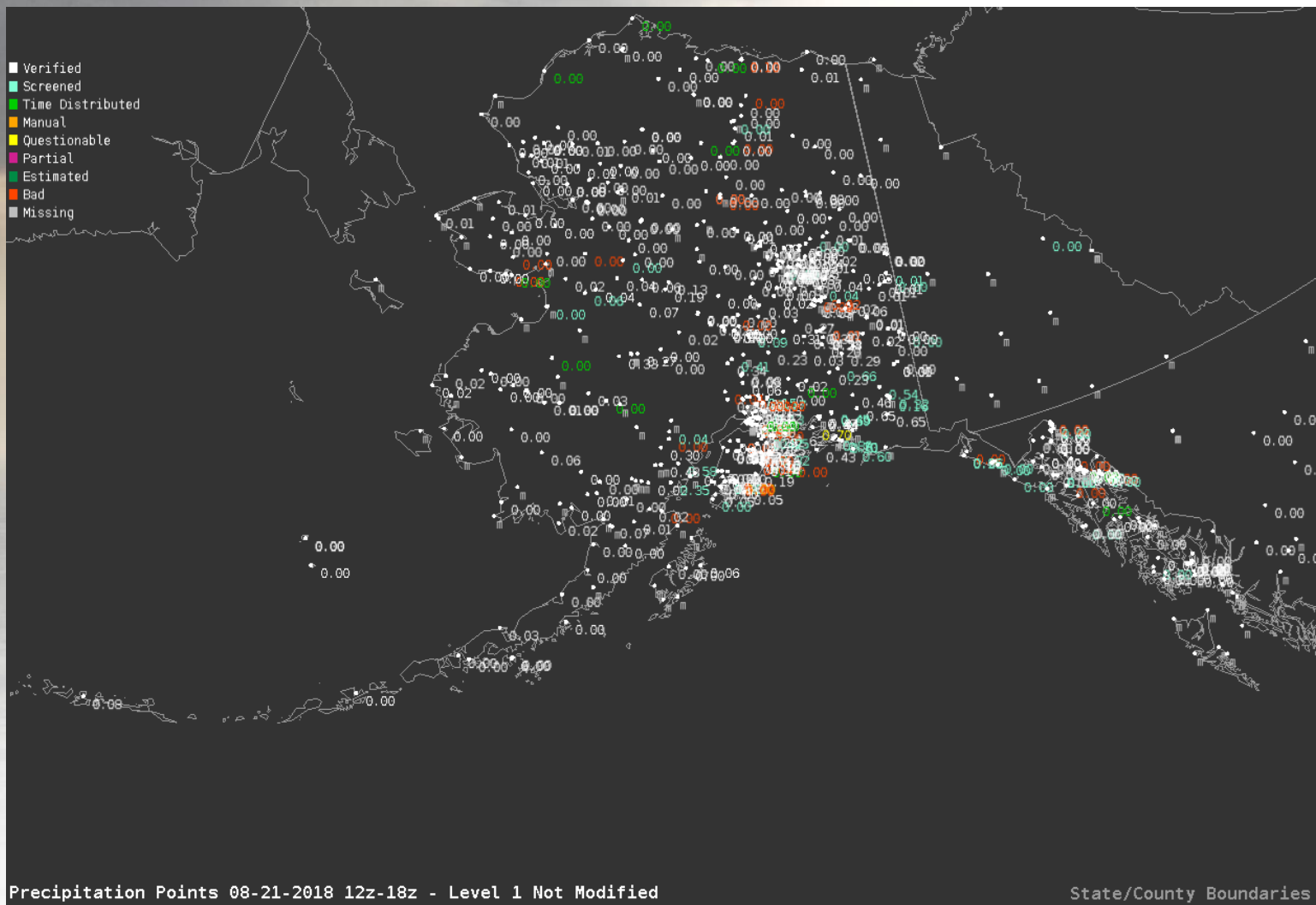
NWS Hydrology Mission in Alaska: Current Model Framework





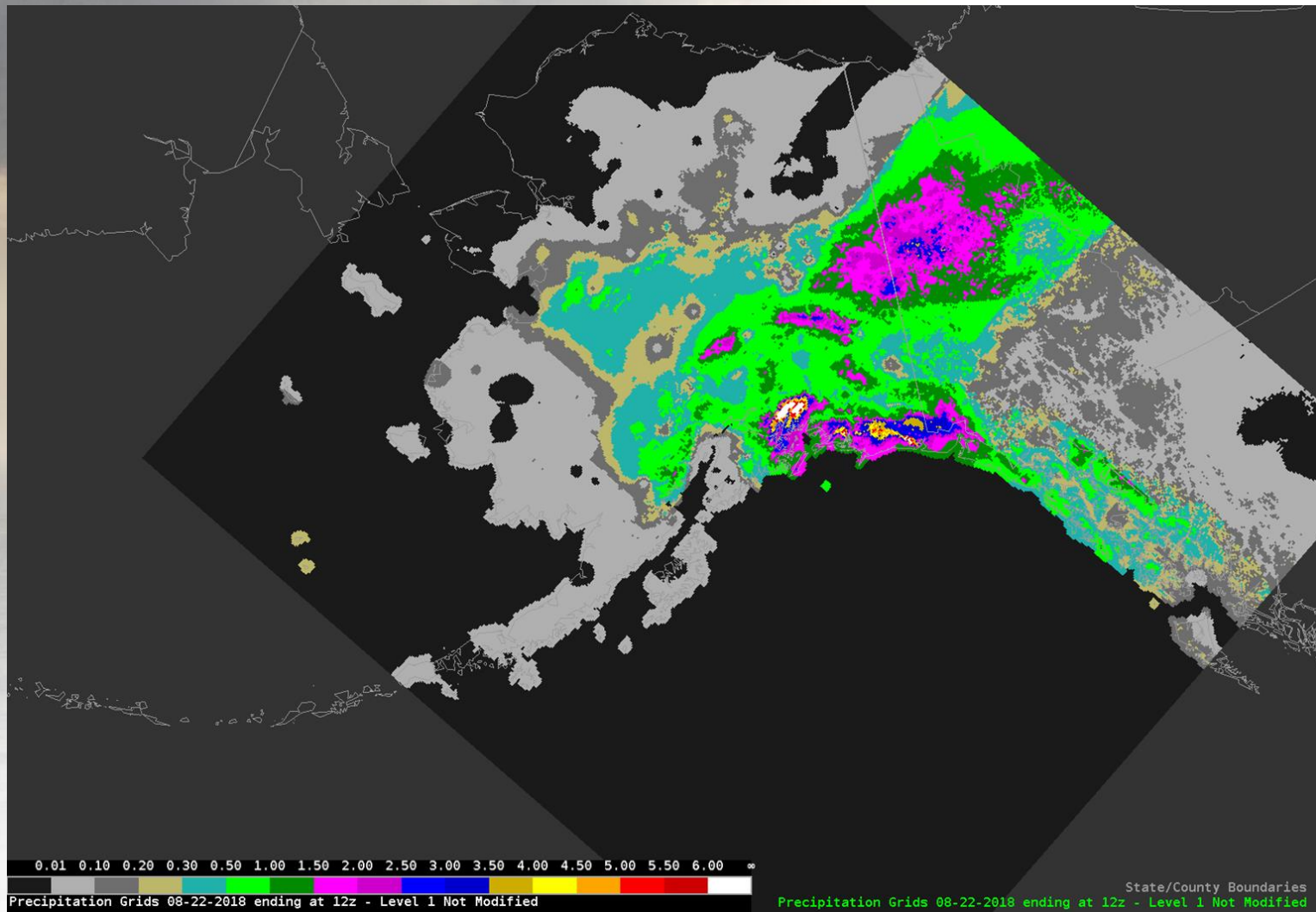


NWS Hydrology Mission in Alaska: Current Model Forcing



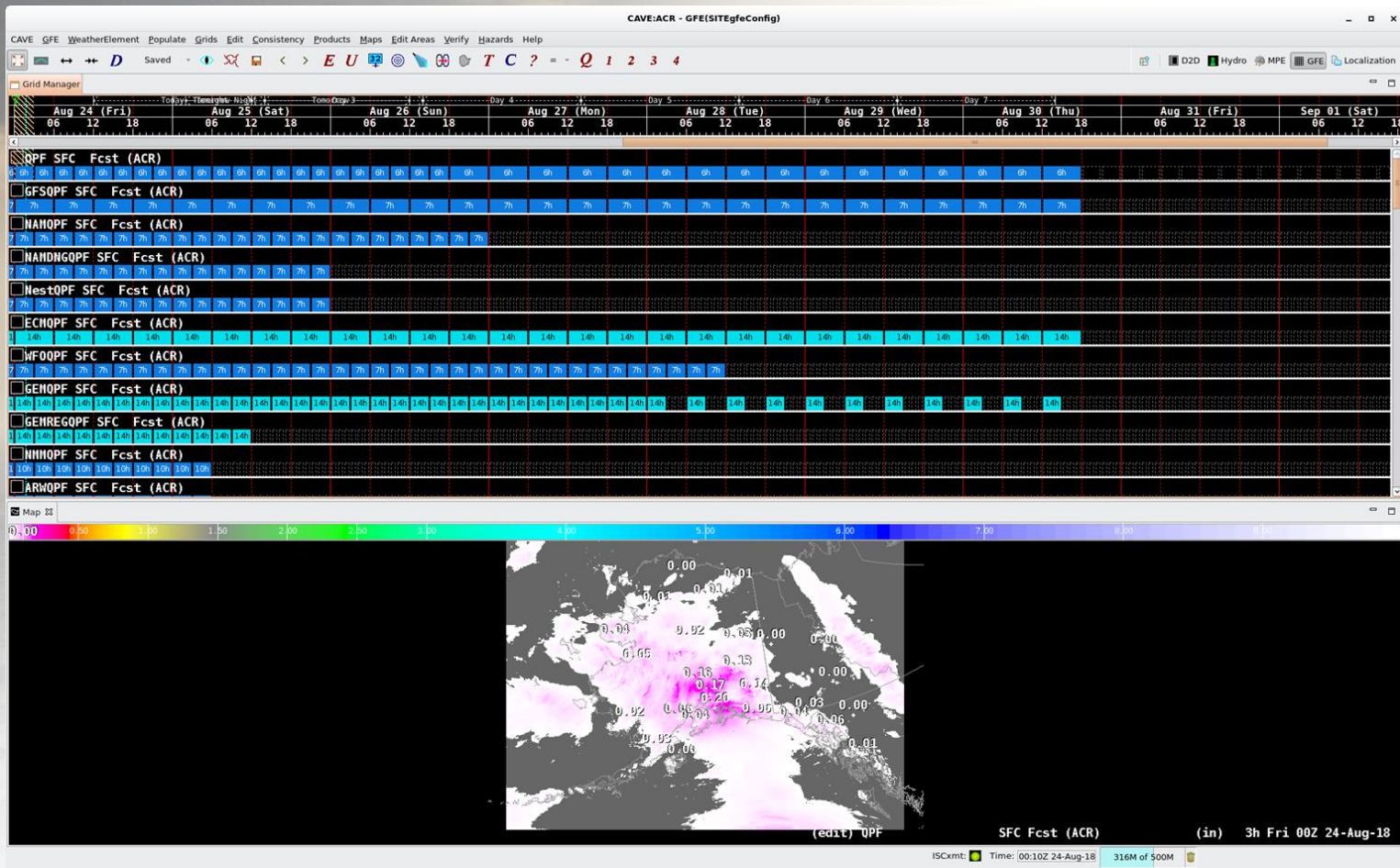


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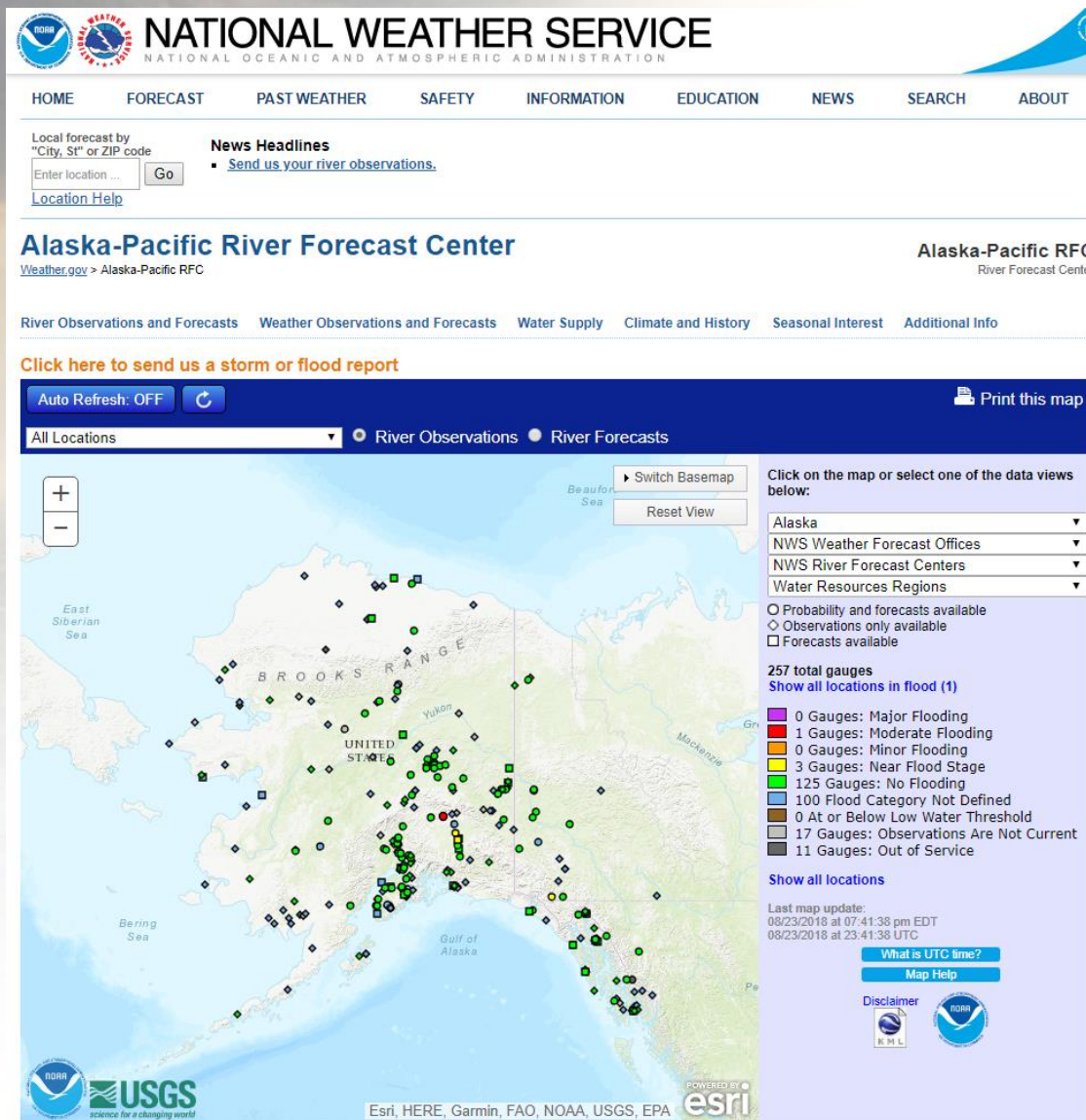


NWS Hydrology Mission in Alaska: Current Model Forcing







NWS Hydrology Mission in Alaska: Sparse Gage Network





NWS Hydrology Mission in Alaska: Current Text Products



**NATIONAL WEATHER SERVICE**
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Forecasts and Info

[Weather.gov](#) > [Alaska-Pacific RFC](#) > Forecasts and Info

Alaska-Pacific RFC
River Forecast Center

River Observations and ForecastsWeather Observations and ForecastsWater SupplyClimate and HistorySeasonal InterestAdditional Info

Text Products

Name	Description	Last Updated
FLOOD	Flood Warnings, Watches or Statements	21 August 2018 10:42 AKDT
NOAK48PACR	Public Information Statement	unavailable
AGAK78PACR	HydroMeteorological Discussion	23 August 2018 14:55 AKDT
FGAK78PACR	Spring Breakup Outlook	14 June 2018 14:57 AKDT
SRAK48PACR	Breakup Summary	05 June 2018 12:47 AKDT
SRAK47PAJK	River Forecast for Southeast Alaska	23 August 2018 12:02 AKDT
SRAK49PAFG AFG	River Forecast for Chena and Tanana Basins	23 August 2018 13:02 AKDT
SRAK49PAFG YKN	River Forecast for Northern and Western Alaska	23 August 2018 13:42 AKDT
SRAK48PAFC	River Forecast for Southcentral and Southwest Alaska	23 August 2018 15:01 AKDT
FGAK88PACR	Recreational River Forecast	23 August 2018 15:07 AKDT
FGAK57PAJK	Daily River Summary - Juneau	23 August 2018 15:08 AKDT
FGAK59PAFG	Daily River Summary - Fairbanks	23 August 2018 15:09 AKDT
FGAK58PAFC	Daily River Summary - Anchorage	23 August 2018 15:13 AKDT
FGAK58PACR	Hourly River Forecast - Hawaii	23 August 2018 15:28 AKDT

Graphic Products



Name	Description
Graphical HydroMet Discussion	Current Hydro and Meteorological Conditions
Breakup Map	Daily Breakup Map (Issued Late April-June)
48hr Flood Potential Outlook	Flood Potential or Current Flooding
24 Hour QPE	Estimate of precipitation during the past 24 hours
0-24 Hour QPF	24 Hour Quantitative Precipitation Forecast for 0 to 24 hours
24-48 Hour QPF	24 Hour Quantitative Precipitation Forecast for 24 to 48 hours
Significant Flood Outlook	5 day Flood Potential Outlook for significant flooding

Select a product to view. It will display in a new tab.




NWS Hydrology Mission in Alaska: Current Text Products





NATIONAL WEATHER SERVICE
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River Forecast for Southeast Alaska

Alaska-Pacific RFC
River Forecast Center

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RIVER SUMMARY AND FORECAST FOR SOUTHEAST ALASKA
NATIONAL WEATHER SERVICE JUNEAU AK
1200 PM AKDT Thu Aug 23 2018

Sites expected to be near or above flood stage: None

10 AM OBSERVED STAGES				FORECAST STAGE FOR				B-F		FLD	
Location	Lst	Wk	Wed	Thu	10PM	4AM	10AM	4PM	Stg	Stg	Stg
					Thu	Fri	Fri	Fri			
Montana Creek at Back Lp Brg	11.3	11.2	11.3		11.1	11.1	11.2	11.9	15.0	15.5	
Jordan Creek nr Juneau	7.6	7.6	7.6		7.6	7.6	7.9	8.1	9.2	9.7	
Staney Creek nr Klawock	7.2	7.1	7.1		7.1	7.1	7.1	7.1	15.0	16.5	

10 AM OBSERVED STAGES				10AM FORECAST STAGE				B-F		FLD	
Location	Lst	Wk	Wed	Thu	Fri	Sat	Sun	Stg	Stg	Stg	Stg
Situk River nr Yakutat	68.1	66.8	66.7		66.7	66.6	-	70.5	71.5		
Alsek River abv Bates River	31.9	31.4	31.7		31.6	31.5	-	31.5	32.5		
Tatshenshini River nr Dalton Post	16.4	16.4	16.2		16.1	16.1	-	19.0	20.0		
Chilkat River at Klukwan	124.0	124.7	123.9		123.8	123.8	-	127.0	128		
Taiya River nr Skagway	14.9	15.1	14.7		14.6	14.7	-	16.0	16.5		
Skagway River at Skagway	22.8	23.2	22.7		22.6	23.1	-	26.5	26.5		
Mendenhall Lake Lake Level	5.2	5.3	5.7		5.7	6.0	-	8.0	9.0		
Taku River nr Juneau	34.7	34.9	35.0		35.2	35.0	-	41.7	43.0		
Stikine River at Telegraph Cr	4.8	4.5	4.5		4.5	4.4	-	20.0	23.0		
nr Wrangell	15.3	16.4	16.4		15.4	14.4	-	25.0	27.0		
Iskut River blw Johnson R	MSG	MSG	MSG		7.3	7.1	-	14.0	17.0		

OTHER RIVER AND LAKE 10 AM OBSERVED STAGES OVER THE PAST WEEK											
Location	Fri	Sat	Sun	Mon	Tue	Wed	Thu	B-F	FLD	Stg	Stg



Flood Outlook Potential



Spring Flood Potential created April 10, 2018

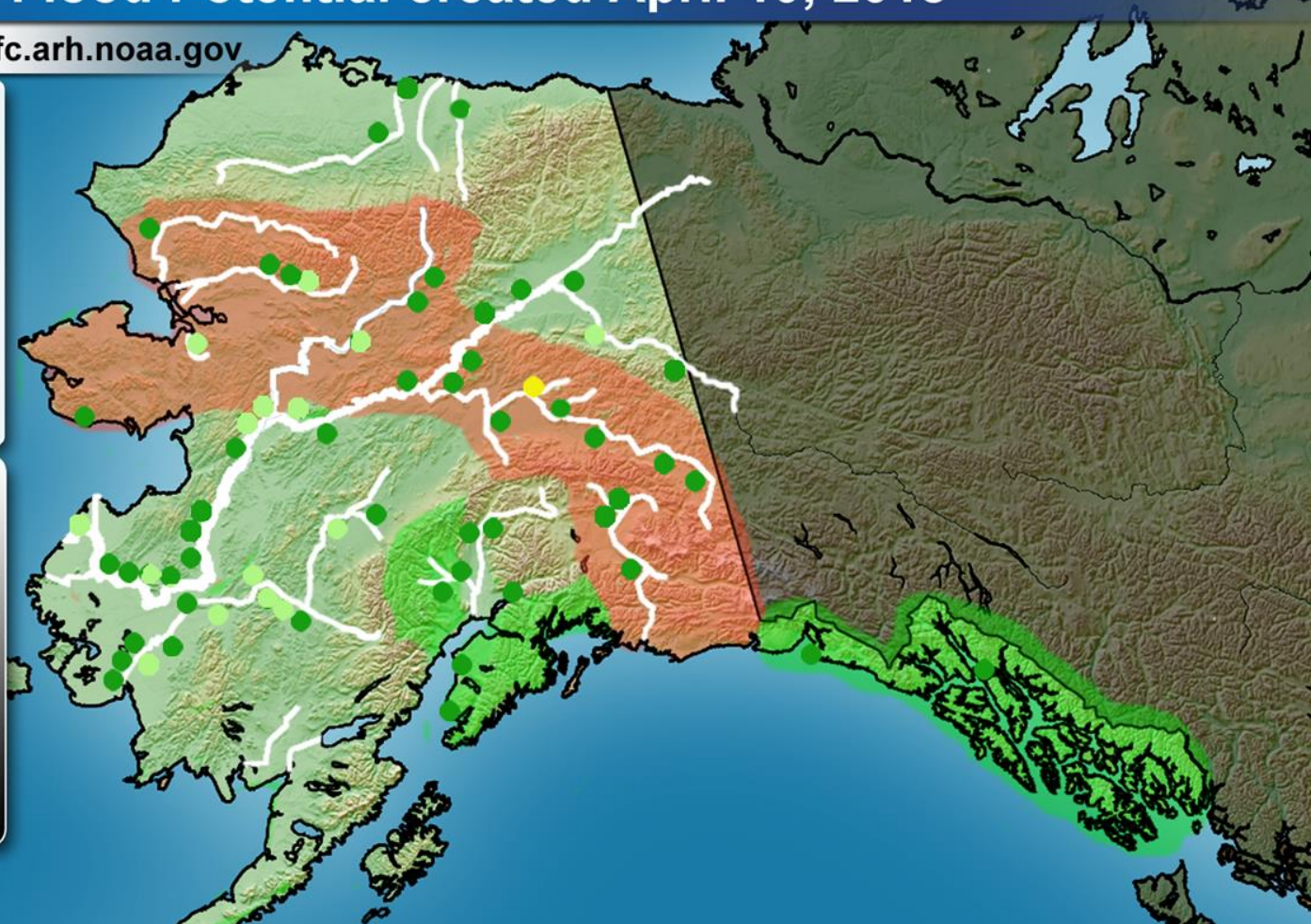
<http://aprfc.arh.noaa.gov>

SNOWMELT
RUNOFF
COMPARED TO
AVERAGE
(unshaded)

BELOW AVERAGE

ABOVE AVERAGE

VILLAGE FLOOD
POTENTIAL





Ice Jam, Rainfall, and Jökulhlaup-Generated Flooding are all Common in Alaska

Photo: NWS



Galena Flooding May 28, 2013

Juneau Flooding July 19, 2018



[Video: KTOO Media](#)



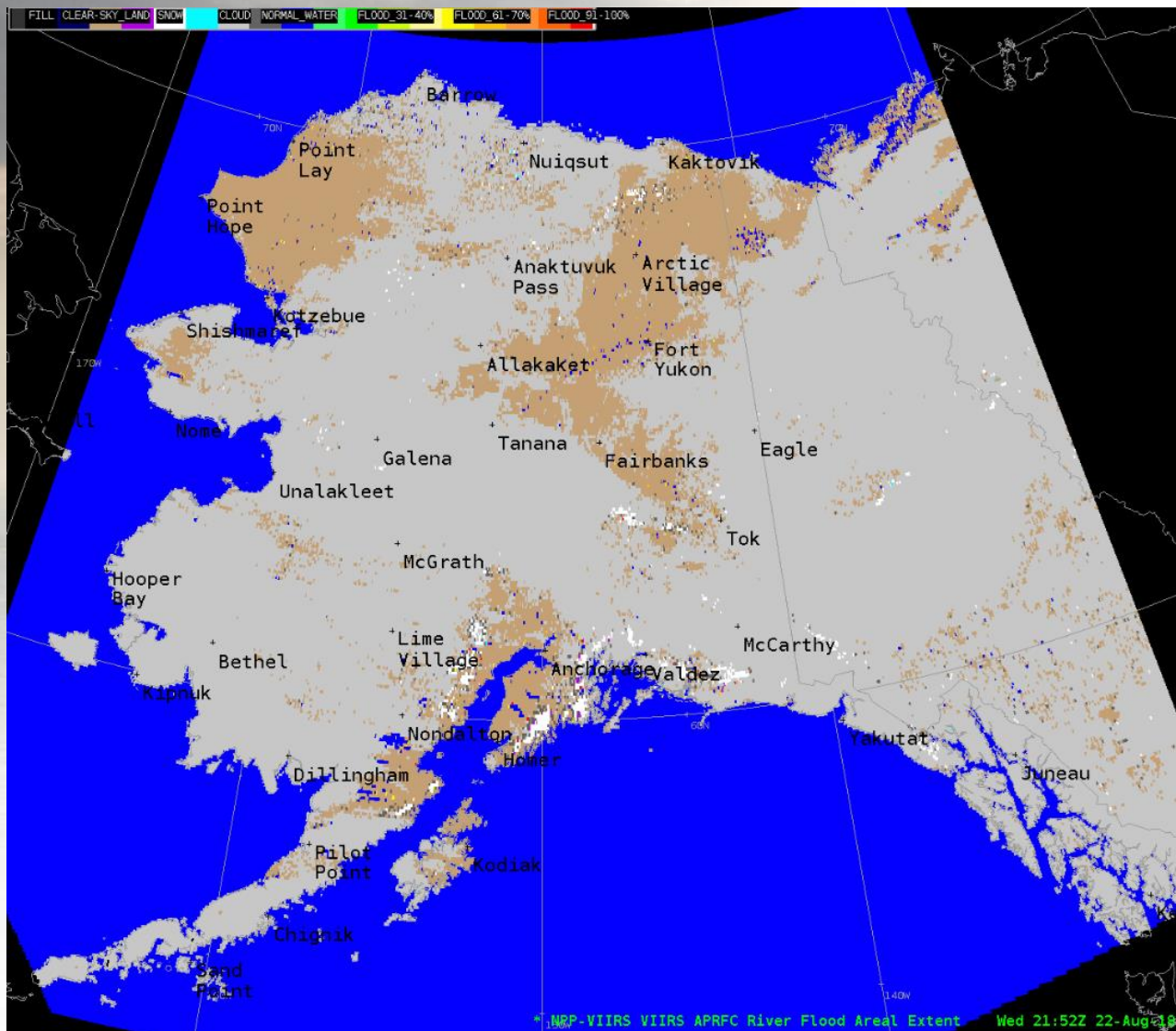
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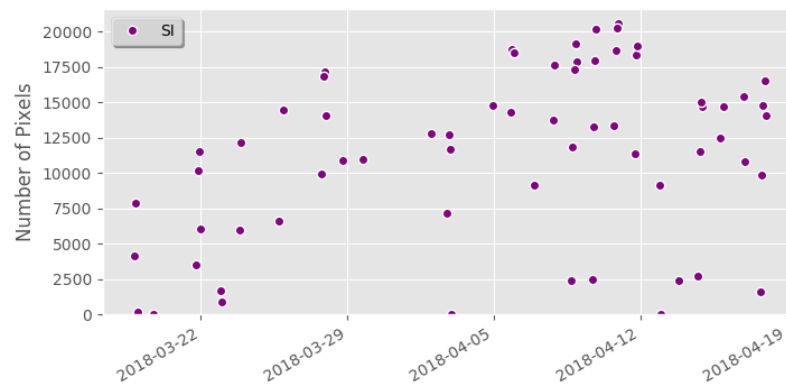
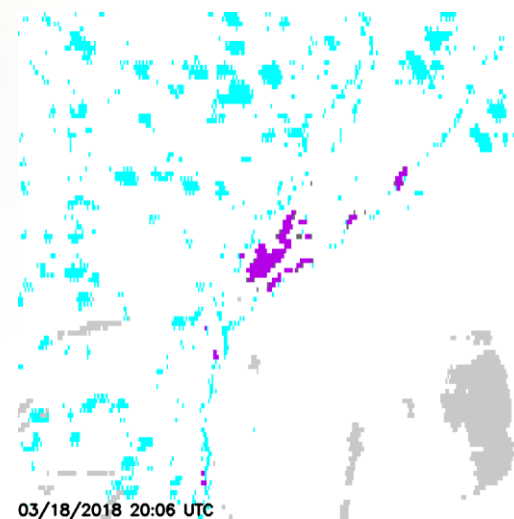
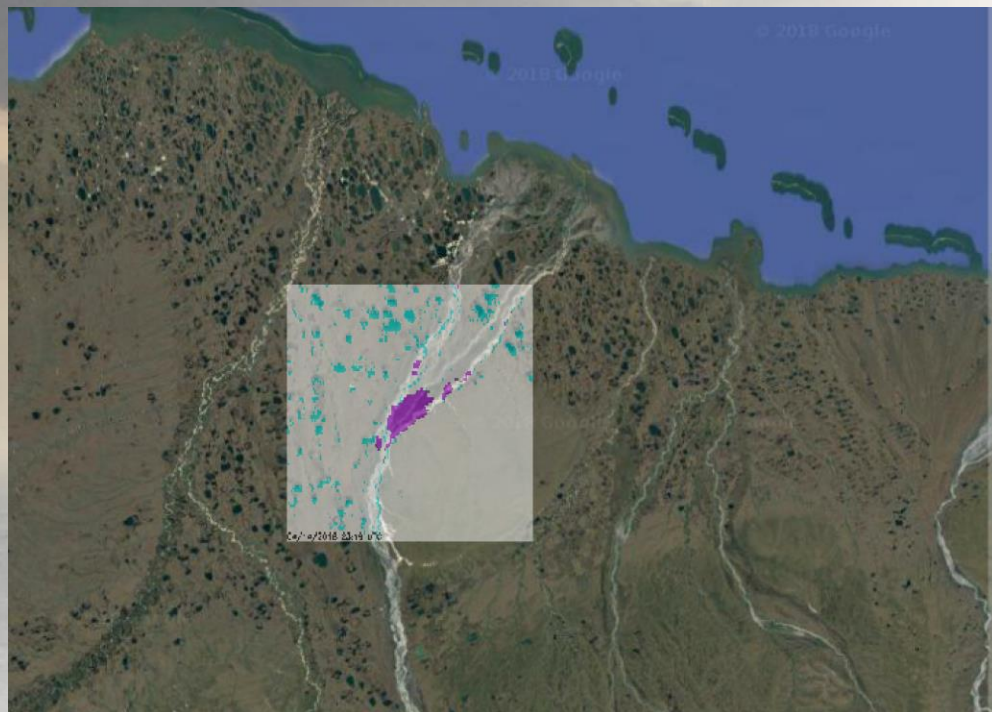
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Current JPSS Workhorse for APRFC: GMU Flood and Ice Products



Sag River Aufeis





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Gaps

- Perhaps our greatest need is a high quality QPE product
- Upcoming effort will be by the NSSL and focus on MRMS-like approach, despite radar deficiency in Alaska
- We need a satellite-derived QPE developed for Alaska conditions based on the strengths and weaknesses of data in our domain
- Also need satellite-derived Snow Water Equivalent that works in the boreal forest



Questions?



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